

WHAT IS CLAIMED IS:

1. A dental mirror comprising:

a light transmitting portion provided in the center or any other portion of the dental mirror for transmitting light therethrough, and

a CCD camera secured on a back of the dental mirror in such a manner that the light transmitting portion of the dental mirror is in optical communication with an incident portion of the CCD camera.

2. A dental mirror comprising:

a light transmitting portion provided in the center or any other portion of the dental mirror for transmitting light therethrough,

a CCD camera on a back of the dental mirror in such a manner that the light transmitting portion of the dental mirror is in optical communication with an incident portion of the CCD camera for capturing an image in a patient's mouth, and

a transmitter secured in the dental mirror for transmitting an image captured by the CCD camera.

3. An intraoral camera system comprising:

a dental mirror having a light transmitting portion provided in the center or any other portion of the dental mirror for transmitting light therethrough,

a CCD camera on a back of the dental mirror in such a manner that the light transmitting portion of the dental mirror is in optical communication with an incident portion of the CCD camera,

a transmitter secured in the dental mirror for transmitting an image captured by the CCD camera, and

a visual monitor for displaying the image captured by the CCD camera as transmitted by the transmitter.

4. An intraoral camera system comprising:

a dental mirror having a portion for transmitting light therethrough, said portion being provided in the center or any other portion of the dental mirror, and

a CCD camera on a back surface of the dental mirror in such a manner that the portion of the dental mirror in optical communication with an incident portion of the CCD camera for capturing an image in a patient's mouth.

5. An intraoral camera system comprising:

a dental mirror having a portion for transmitting light therethrough, the light transmitting portion being provided in the center or any other portion of the dental mirror by removing a reflective material therefrom, and

a CCD camera secured on a back surface of said dental mirror in such a manner that the light transmitting portion coincides with an incident portion of the CCD camera.

6. An intraoral camera system as set forth in Claim 5, further comprising:

a hand mirror shaped visual monitor for displaying image data received from the CCD camera via cable or radio, and

a server that is capable of storing and outputting the image data any time onto the monitor,

wherein even though a patient is in a horizontal position, the patient or a third party can utilize said hand mirror shaped visual monitor to view an image which is very close to the image that a dentist views as a reflection from the dental mirror having the CCD camera built therein.

7. The intraoral camera system as set forth in Claim 5 further comprising a server capable of storing image data captured by the CCD camera and outputting the image data as required to project the stored image data on the monitor on an as needed basis.

8. The intraoral camera system as set forth in Claim 5 wherein the monitor is made in form of a hand mirror such that the CCD camera image data received via cable or radio can be viewed without changing the patient's position.

9. The intraoral camera system as set forth in Claim 5, further comprising:
a liquid crystal plate having a light transmitting portion at the center where some liquid crystal material is removed to transmit light therethrough, and
a CCD camera provided on the back surface of the liquid crystal plate in such a manner that the light transmitting portion from which a reflective material is removed coincides with an incident portion of the CCD camera,
thereby projecting an object located in front of the CCD camera on a liquid crystal screen in the same manner that a reflector projects the object.

10. The intraoral camera system as set forth in Claim 8 which further comprises an image conversion processor for inverting data input from the CCD

camera at the center of the hand mirror shaped liquid crystal screen upside down or backside forward or counterclockwise or clockwise.

11. The intraoral camera system as set forth in Claim 5,
wherein the CCD camera is rotatably attached to the center of the back surface of the dental mirror, and
wherein the dental mirror further comprises
a gear attached to the same rotary shaft as that of the CCD camera such that the gear rotates around the CCD camera,
a micromotor provided on the back surface of the dental mirror such that the motion of the micromotor is incorporated with that of the gear,
a battery provided inside a holder for the dental mirror for driving the micromotor,
a gyro sensor provided inside the holder for the dental mirror holder for outputting a signal associated with an angle of inclination of said dental mirror to a horizontal plane, and
a controller for driving the micromotor in accordance with the signal from the gyro sensor to control rotation angles of the CCD camera,
thereby allowing an image captured at a preset angle to be displayed regardless of the angle at which a dentist holds or insert the dental mirror into the patient's mouth.

12. An intraoral camera system comprising:

a dental mirror having a portion for transmitting light therethrough, the light transmitting portion being provided in the center or any other portion of the dental mirror by removing a reflective material therefrom, and

an optical fiber having its one end connected to the back of the dental mirror in such a manner that an incident portion and an illumination portion coincide each other at the light transmitting portion, the other end of the optical fiber being provided with a CCD camera and a illumination light source for inputting an image in the field of view obtained at the incident portion, and

a visual monitor for displaying image data received from the CCD camera by radio or cable.

13. The intraoral camera system as set forth in Claim 12

wherein the CCD camera is placed in front of the monitor screen, and

wherein the optical fiber that is removably attached to the CCD camera, and

wherein, when the optical fiber is removed, the image captured by the CCD camera attached to the front of the monitor screen is displayed, thereby providing the intraoral camera system as a hand mirror.

14. The intraoral camera system as set forth in Claim 12, further comprising:

a hose made of a flexible material that is connected to a compressor,

an air exhaust pipe, whose one end is connected to the hose and the other end is provided with a jet nozzle pointing toward the CCD camera attached to the dental mirror and the incident portion of the optical fiber, whereby air is injected onto the CCD camera attached to the dental mirror and the incident portion of the optical fiber, thereby enhancing the field of view thereof.

15. The intraoral camera system as set forth in Claim 14, wherein an additional hose made of a flexible material is connected to a vacuum device, and the air exhaust pipe has a suction inlet connected to the additional hose at a point which is suited to suck exhausted air from the jet nozzle, so as to inject air and to discharge air to/from the CCD camera and to/from the optical fiber's incident portion while sucking air therefrom, thereby preventing patient's mouth from drying and enhancing the field of view.

16. The intraoral camera system as set forth in Claim 1 further comprising a heater provided at a position where the heater does not shield the incident portion on back of the dental mirror for preventing the mirror surface and a surface of the incident portion from fogging due to the patient's breathing, thereby providing a clear image.

17. A dental mirror comprising:
a light transmitting portion provided in the center or any other portion of the dental mirror for transmitting light therethrough, and
a CCD camera secured on a back of the dental mirror in such a manner that the light transmitting portion of the dental mirror is in optical communication with the CCD camera for capturing an image in a target area in a patient's mouth, and
a light source in optical communication with the light transmitting portion for illuminating the target area in the patient's mouth.

18 . A dental mirror comprising

a CCD camera attached to the center of a back surface of a dental mirror,
a gear attached to the same rotary shaft as that of the CCD camera such that
the gear rotates around the CCD camera,
a battery driven micromotor,
a battery positioned inside the dental mirror,
a gyro sensor for outputting a signal that incorporates a motion of the gyro
sensor with that of the gear on inclination of the dental mirror to a horizontal plane or
floor, and a control mechanism for controlling the rotation angle of the CCD
camera in accordance with the signal from the gyro sensor.

19. A method for performing dental operation by a dentist, comprising the
steps of:

preparing a dental mirror with a CCD camera attached to the center of a back
surface of the dental mirror;

placing the dental mirror into a patient mouth so as to capture an image in a
target area in the patient's mouth;

providing the patient with a visual display of the image captured by the CCD
camera on the dental mirror to convey the image the dentist directly views to the
patient when the dentist described the condition of a disease in the target area in the
patient's mouth.

20. The method as set forth in Claim 19 wherein the visual display is provided
by a hand mirror shaped LCD monitor.